

Original Article**Assessment of ophthalmic morbidities in school children (6-14 years) in rural community**

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ABSTRACT

Background: School children are affected by various eye disorders like refractive errors, squint, Vitamin A deficiency and eye infections. Most of the ophthalmic morbidities originate in childhood and if they are not diagnosed early they may result in severe disabilities and affects children's performance in the school.

Objectives: To find out prevalence of various ophthalmic morbidities in the school children (6 – 14 years) and to study the socio demographic profile of school children (6 – 14 years) related to ophthalmic morbidities.

Materials and Methods: A cross-sectional study was carried out on 500 school children in schools of Aliabada village, Jamnagar district.

A Pretested semi-structured proforma was used to collect the information related to study and students were screened for eye disorders by visual acuity testing using snellen's chart and colour blindness was checked by using Ishihara's chart and torch light examination. Visual acuity was assessed. Data entry and analysis was done using Microsoft excel 2007 and Epi info.

Results: The prevalence of ophthalmic morbidity was found to be 33%. Among the various ophthalmic morbidities, major were refractive errors i.e. 25.6% followed by Vit A deficiency in 8.6% cases and followed by squint 2.4% and various others. The study also found that social class and age were associated with ophthalmic morbidity. It is found statistically significant.

Conclusions: Refractive error was the most common ophthalmic morbidity in the school children followed by Vit A deficiency, squint and various others. In the study we found that social class and age were significantly associated with ophthalmic morbidity.

Key words: Ophthalmic morbidities, School children (6 – 14 years), Prevalence, Rural community

INTRODUCTION

School children are affected by various eye disorders like refractive errors, Vitamin A deficiency and eye infections. Most of the ophthalmic morbidities originate in childhood and if they are not diagnosed early they may result in severe disability and affect children's performance in the school[1].Refractive errors are common in children and are the commonest cause of visual impairment around the world and the second leading cause of treatable blindness[2].In India 30% of blind lose their sight before the age of 20 years , so that early detection and treatment of ophthalmic morbidity is important [3].According to National Blind Survey (NBS) 2001-02 prevalence of blindness in India was 1.1% and in 2006-2007 prevalence was 1% in which refractive error was 19.70% [4].School children form a significant segment of the

community. Children in school going age group (6-16 years) represent 25% of the population in developing countries [5].Visual impairment are a worldwide problem that has a significant socioeconomic impact. The present study was conducted with the objective to find out prevalence of ophthalmic morbidity and to assess the socio demographic factors related to it.

MATERIAL AND METHODS

Study design: A cross-sectional study was carried out during the period October 2012 to December 2012 covering Government schools of Aliabada village of Jamnagar district which is a field practice area of rural health training centre, department of Community Medicine, Shri M.P Shah Medical College, Jamnagar. Study population was Primary School children in the age group of -6-14 years.

SAMPLE SIZE: $N = 4pq/l^2$

Where, n = required sample size, p = proportion or prevalence of interest, $q = 100 - p$, l = allowable error (10 %)

An anticipated P value is taken as 50% as per WHO practical manual on Sample size determination in health studies by Lwanga and Lemeshow [6].

P is taken as 50%, so as $q = 50\%$. If $L = 10\%$, Then, sample size would be $n = 4 \times 50 \times 50 / 5 \times 5 = 400$. Non-response rate/loss of sample = 20% of sample size. So, total sample size for the study would be 480. To make round Figure, 500 study subjects were chosen.

Table 1: Socio-demographic profile of school children associated with ophthalmic morbidities

| Socio-demographic profile | Ophthalmic morbidities | | Total (N=500) |
|-------------------------------|------------------------|-------------|---------------|
| | Yes (N=167) | No (N=333) | |
| Age (years) : | | | |
| 6-7 | 5(2.99%) | 50(15.01%) | 55(11%) |
| 8-9 | 19(11.37%) | 63(18.91%) | 82(16.4%) |
| 10-11 | 79(47.30%) | 118(35.43%) | 197(39.4%) |
| 12-13 | 64(38.32%) | 102(30.63%) | 166(33.2%) |
| Sex: | | | |
| Male | 88(52.69%) | 187(56.15%) | 275(55%) |
| Female | 79(47.30%) | 146(43.84%) | 225(45%) |
| Religion: | | | |
| Hindu | 151(90.41%) | 317(95.19%) | 468(93.6%) |
| Muslim | 16(9.58%) | 16(4.80%) | 32(6.4%) |
| Father's education: | | | |
| Illiterate | 35(20.95%) | 57(17.11%) | 92(18.4%) |
| Primary | 70(41.91%) | 135(40.55%) | 205(41%) |
| Secondary | 43(25.74%) | 90(27.02%) | 133(26.6%) |
| Higher secondary | 8(4.79%) | 29(8.71%) | 37(7.4%) |
| Graduate | 11(6.58%) | 22(6.61%) | 33(6.6%) |
| Mother's education: | | | |
| Illiterate | 63(37.72%) | 129(38.73%) | 192(38.4%) |
| Primary | 82(49.10%) | 143(42.94%) | 225(45%) |
| Secondary | 15(8.98%) | 30(9.00%) | 45(9%) |
| Higher secondary | 2(1.19%) | 15(4.50%) | 17(3.4%) |
| Graduate | 5(2.99%) | 16(4.80%) | 21(4.2%) |
| Father's occupation: | | | |
| Labourer | 125(74.85%) | 261(78.37%) | 386(77.2%) |
| Service | 21(12.57%) | 31(9.30%) | 52(10.4%) |
| Others | 21(12.57%) | 41(12.31%) | 62(12.4%) |
| Mother's occupation: | | | |
| Labourer | 63(37.72%) | 113(33.93%) | 176(35.2%) |
| Housewife | 99(59.28%) | 203(60.96%) | 302(60.4%) |
| Others | 5(2.99%) | 17(5.10%) | 22(4.4%) |
| Social classification: | | | |
| 1 | 0(0.00%) | 1(0.3%) | 1(0.2%) |
| 2 | 12(7.18%) | 58(17.41%) | 70(14%) |
| 3 | 112(67.06%) | 210(63.06%) | 322(64.4%) |
| 4 | 40(23.95%) | 62(18.61%) | 102(20.4%) |
| 5 | 3(1.79%) | 2(0.60%) | 5(1%) |

A Pretested semi-structured proforma was used to collect the information related to study and students were screened for eye disorders by visual acuity testing using snellen's chart and colour blindness was checked by using Ishihara's chart and torch light examination. Visual acuity was tested by snellen's chart at the distance of 6 m. All examinations were carried out in the schools itself. Styte and trachoma was identified on the basis of their clinical signs and symptoms. Confirmation of diagnosis was done in nearest primary health centre. Prior Permission from the principles was taken to conduct the study in the schools. Oral consent was taken from study participants after explaining them about the study purpose. Here, social class was calculated by using modified Prasad's scale. Average CPI (consumer price index) used for calculation was 969 in 2012. Data entry and analysis was done using Microsoft excel 2007 and epi info.

RESULTS

Table 1 shows that school children aged from 6 years to 14 years having mean age of 10 years. Most children are in the age group of 10-11 years and 12-13 years. For, gender distribution there are 275 boys and 225 girls. Out of 275 boys, 88 boys have ophthalmic morbidities and out of 225 girls, 79 girls have ophthalmic morbidities. Primary education of father and mother of children having ophthalmic morbidity was found to be 41.91% and 49.10% respectively. Most of the fathers of children having ophthalmic morbidities were working as a labourer i.e. 74.85% and mothers were housewives i.e. 59.28%.

Table -2 shows that out of 500 students, 167 students have ophthalmic morbidities. Out of this 128 students had refractive error that accounts highest 25.6%. So, Refractive error was most common ophthalmic morbidity. The second common ophthalmic morbidity was vit A deficiency that accounts 43 students (8.6%). followed by Squint 2.4%, colour blindness 0.4%, Pterigium 0.4%, Trachoma 0.4%, Styte 0.4%.

Table-3 The prevalence of ophthalmic morbidities increased with age, being minimum (9.09%) in 5-6 years age group and maximum (40.10%) in 10-11 years age group. The association between prevalence of ophthalmic morbidities and age was found to be statistically significant.

Table 4 The prevalence of ophthalmic morbidities was higher among lower middle socio-economic class i.e. 67.06% followed by upper lower i.e.

23.95%. The prevalence of ophthalmic morbidities was associated with respective socioeconomic class & it was statistically significant ($p < 0.05$).

Table 2: Distribution of ophthalmic morbidities

| Ophthalmic morbidities | ICD code | Boys (%) N=88 | Girls (%) N=79 | Total (%) N=167 |
|-------------------------|----------|------------------|-------------------|--------------------|
| Refractive error | H 52.7 | 60 (35.92%) | 68 (40.71%) | 128 (76.64%) |
| Vit A deficiency | E 50 | 30 (17.96%) | 13 (7.78%) | 43 (25.74%) |
| Squint | H 50.9 | 7 (4.19%) | 52.99% | 12 (7.2%) |
| Colour blindness | H 53.5 | 2 (1.19%) | 0 (0.00%) | 2 (1.19%) |
| Pterygium | H11.009 | 0 (0.00%) | 2 (1.19%) | 2 (1.19%) |
| Trachoma | A 71.9 | 2 (1.19%) | 0 (0.00%) | 2 (1.19%) |
| Styte | H 00.0 | 2 (1.19%) | 0 (0.00%) | 2 (1.19%) |
| Corneal opacity | H 17.9 | 1 (0.59%) | 0 (0.00%) | 1 (0.59%) |

DISCUSSION

WHO estimates that 285 million people are visually impaired, 246 million have low vision and 39 million are blind. Out of this 80% percent of the visual impairment is preventable and 90% of them live in the developing countries [7]. School children form a sizeable segment of the community. The visual experience of a child plays a significant role in his/her psychological, physical and intellectual development [8].

To address the issue of blindness in children, the World Health Organisation (WHO) recently launched a global initiative, VISION 2020-The Right to Sight, to eliminate avoidable blindness among children. Strategies to address the eye health of children in India have focused on school eye health programs. School eye screening programs have been part of the activities of the district blindness control society (DBCS) activities since 1996[9]. Children are given priority in the Vision 2020 initiative and WHO plans for fighting blindness[10].

Table 3: Association of age with ophthalmic morbidities

| Age in years | Ophthalmic morbidities | | |
|--------------|------------------------|------------|------------|
| | Yes | No | Total |
| 6 | 0(0) | 10(3.03) | 10(2) |
| 7 | 5(2.99) | 40(12.01) | 45(9) |
| 8 | 5(2.99) | 40(12.01) | 45(9) |
| 9 | 14(8.38) | 23(6.90) | 37(7.4) |
| 10 | 34(20.35) | 35(10.51) | 69(13.8) |
| 11 | 45(26.94) | 83(24.92) | 128(25.6) |
| 12 | 44(26.34) | 60(18.01) | 104(20.8) |
| 13 | 20(11.97) | 42(12.61) | 62(12.4) |
| Total | 167 | 333 | 500 |

($\chi^2=37.180$, $p<0.05$)

Present study shows that the overall prevalence of ophthalmic morbidities was 33%. Refractive errors were most common ophthalmic morbidity that accounts for 25.6%. The second most common ophthalmic morbidity was vit A deficiency that accounts for 8.6%. In another study was done in Delhi on Ocular morbidity amongst primary school children in Delhi b Kumar R et al .They found prevalence of ophthalmic morbidities 22.7%. In this study association between ocular morbidities and age found to be statistically significant.[1]

Table 4: Association of ophthalmic morbidities with social class

| Social class | Ophthalmic morbidities | |
|--------------|------------------------|------------|
| | Yes | No |
| 1 | 0(0) | 1(0.30) |
| 2 | 12(7.18) | 58(17.41) |
| 3 | 112(67.06) | 210(63.06) |
| 4 | 40(23.95) | 62(18.61) |
| 5 | 3(1.79) | 2(0.60) |
| | 167 | 333 |

$\chi^2=12.237$ p value= 0.016

Madhu Gupta and colleagues conducted study on ocular morbidity prevalence among school children

observed prevalence of ocular morbidity was 31.6%. Leading cause being refractive error followed by squint, colour blindness, vitamin A deficiency [11].

In our present study association between ophthalmic morbidities and age found to be statistically significant ($p<0.05$). As age increased, ophthalmic morbidities found to be increased. Also, association between ophthalmic morbidities and social class found to be statistically significant ($p<0.05$). In, lower middle social class ophthalmic morbidities are higher.

CONCLUSION

High prevalence of ophthalmic morbidities among school children was observed in rural area of Jamnagar district, Gujarat. Refractive errors and Vit.A deficiency were the most common ophthalmic morbidities. There is significant association between ophthalmic morbidities with age, social class. Those school children who have ophthalmic morbidities were referred to the higher facility. For, recommendations, prevention, early recognition and prompt treatment of ophthalmic morbidities by periodic screening of school children would reduce ophthalmic morbidities. IEC Information Education Communication relating to proper nutrition, screening and timely eye check up should be done to increase awareness among school children, parents and school teachers. Vision screening should routinely be done at school entry, midway through school and at completion of primary school, for early detection and treatment of eye diseases.

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Date of Submission: 09/09/2013

Date of Acceptance: 13/11/2013

How to cite this article: Gohel A, Bundela C, Rathod M, Solanki H, Shah V, Makwana N, Parmar D. Ophthalmic morbidities in school children (6-13 years) in rural community. *J Res Med Den Sci* 2013;1(2):67-71

Source of Support: None

Conflict of Interest: None Declared